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EXAMINATION PAPERS

FOR

FIRST, SECOND AND THIRD CLASS
PROVINCIAL CERTIFICATES.

JULY, 1877.

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(No. 1.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

ENGLISH LITERATURE.

TIME—TWO HOURS AND A QUARTER.

Examiner: J. M. BUCHAN, M.A.

1. Carlyle says that Scott employed great powers in procuring the means to gratify an essentially vulgar ambition. To what does this criticism refer? Do you concur in it? Give reasons for your answer.

2. Name the author of each of the following works:—The Ancient Mariner, Rasselas, Woodstock, Thalaba the Destroyer, Childe Harold's Pilgrimage, the Bard, Hyperion, the Excursion, and Pamela.

3. Tell the story of the ballad of Alice Brand, quoting any parts of it which you remember. In what part of the Lady of the Lake does it occur?

[OVER.

4 " The Monarch saw the gambols flag,
And bade let loose a gallant stag,
Whose pride, the holiday to crown,
Two favourite greyhounds should pull down,
That venison free and Bordeaux wine
Might serve the archery to dine.
But Lufra,—whom from Douglas' side
Nor bribe nor threat could e'er divide,
The fleetest hound in all the North,—
Brave Lufra saw, and darted forth.
She left the royal hounds midway,
And dashing on the antlered prey,
Sunk her sharp muzzle in his flank,
And deep the flowing life-blood drank.
The King's stout huntsman saw the sport
By strange intruder broken short,
Came up, and with his leash unbound,
In anger struck the noble hound.
——The Douglas had endured that morn,
The King's cold look, the nobles' scorn,
And last, and worst to spirit proud,
Had borne the pity of the crowd;
But Lufra had been fondly bred,
To share his board, to watch his bed,
And oft would Ellen, Lufra's neck,
In maiden glee, with garlands deck:
They were such playmates, that with name
Of Lufra, Ellen's image came.
His stifled wrath is brimming high,
In darkened brow and flashing eye;
As waves before the bark divide,
The crowd gave way before his stride;
Needs but a buffet and no more,
The groom lies senseless in his gore,
Such blow no other hand could deal,
Though gauntleted in glove of steel."

(i.) What do you consider to be the fine strokes in this passage?

(ii.) At what juncture does this incident occur?

(iii.) Give the name of the monarch, and that of this Douglas. Where is Bordeaux?

(iv.) Scan l. 5.

(v.) For what is 'archery' used in l. 6? Give the meaning of 'leash' in l. 17.

(vi.) Give the grammatical relations of the words in l. 33.

(vii.) Tell what you know about the Douglas family.

5. State your views as to the points of difference between the men of the Lady of the Lake and the actual men of the time of James V.

6. "Far from the madding crowd's ignoble strife,
Their sober wishes never learned to stray;
Along the cool sequestered vale of life
They kept the noiseless tenor of their way.

Yet ev'n these bones from insult to protect
Some frail memorial still, erected nigh,
With uncouth rhimes and shapeless sculpture deck'd,
Implores the passing tribute of a sigh."

—*Gray's Elegy, Ll.* 73-80.

(i.) Give the grammatical relation of 'far' l. 73; and 'still,' l. 78.

(ii.) Explain the meaning of 'madding,' l. 73; and 'vale of life,' l. 75. For what does the expression 'these bones,' l. 77, stand?

(iii.) Give the derivation of 'uncouth.' Explain how 'rhyme' came to be spelt with an *h* and a *y*.

(iv.) Why is the final *d* in 'deck'd sounded like *t*? Give similar instances.

7. Quote or refer to passages in the Elegy and the Lady of the Lake that show the points of view from which persons in low station are regarded in these poems. Is the perusal of them likely to inspire respect or disdain for the humble? Would it be correct to infer that the sentiments on this subject expressed in the poems are in each case the sentiments of the authors? Give reasons for your answers.

8. State briefly the leading thoughts of the Elegy.

(No. 2.)

Education Department, Ontario.

JULY ENAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

ENGLISH GRAMMAR.

Time—Three Hours.

Examiner: J. M. Buchan, M.A.

1. Malet.—Harold, I am thy friend, one life with thee,
And even as I should bless thee saving mine,
I thank thee now for having saved thyself.
Harold.—For having lost myself to save myself,
Said 'ay' when I meant 'no,' lied like a lad
That dreads the pendent scourge, said 'ay' for 'no'!
Ay! No!—he hath not bound me by an oath—
Is 'ay' an oath? is 'ay' strong as an oath?
Or is it the same sin to break my word
As break mine oath? He called my word my bond!
He is a liar who knows I am a liar,
And makes believe that he believes my word—
The curse be on his head—not bounden—no.
Tennyson.—*Harold, Act* ii., *Sc.* 2.

(i.) Divide Harold's speech into propositions, state their kind and connection, and fully analyse the first three and the last three.

(ii.) Parse "life," "even," "saving," and "mine," in Malet's speech; and "word," "bond," "believe," and "be," in the last four lines of Harold's speech.

(iii.) Scan the first line of the extract, naming the metre.

(iv.) Explain the derivation of "save," "mean," "pendent," and "crime."

[OVER.

2. Parse the italicized words in the following lines:

"I *had liefer* that the fish *had swallowed* me
Like Jonah than *have known* that there were such devils."
TENNYSON.—*Harold, Act* ii., *Sc.* 1.

"That knowledge made him *all the* carefuller."
TENNYSON.—*Harold, Act* iii., *Sc.* 1.

3. Distinguish between—

The European and African races.
The European and the African races.

and

He made a better soldier than poet
He made a better soldier than a poet.

and

The remembrance of friends dead and alive.
The remembrance of dead and alive friends.

4. Point out the ambiguity in

The red white and blue flags.

Re-write the following sentence so as to make the meaning clear:—

"Men look with an evil eye upon the good that is in others; and think that their reputation obscures them, and that their commendable qualities do stand in their light; and therefore they do what they can to cast a cloud over them, that the bright shining of their virtues may not obscure them."—*Tillotson.*

5. "In 'The first king of Rome,' 'first' and 'of Rome' are not co-ordinate adjuncts."

Explain what is meant.

6. Criticise

"The Megarean sect was founded by Euclid, not the mathematician, and were the happy inventors of logical syllogism, or the art of quibbling."—*Tytler.*

"There are a sort of men whose visages
Do cream and mantle like a standing pond."—*Shakespeare.*

"A laggard in love and a dastard in war,
Was to wed the fair Ellen of brave Lochinvar."—*Scott.*

"Johnson's Lives are being reprinted."

"The captain with his men were taken prisoners."

"Pompey as well as Cæsar were great men."

"Sand and salt and a mass of iron are easier to bear than a man without understanding."

7. Give rules for the placing of adverbs and adverbial adjuncts. Illustrate the importance of placing words properly by the example of "only."

8. Punctuate the following sentences, and arrange the words in iambic pentameters, putting capitals in the proper places :—

it is indeed a most desired event if when a parent from a parents heart lifts from this earth to the great father of all a prayer both when he lays him down to sleep and when he rises up from dreaming it one supplication one desire one hope that he would grant a wish for his two sons even all that he demands in their regard and suddenly beyond his dearest hope it is accomplished he should then rejoice and call his friends and kinsmen to a feast and task their love to grace his merriment then honour me thus far for i am he

SHELLEY.—*The Cenci, Act* i., *Sc.* 3.

9. State briefly the principal differences between English and its parent Anglo-Saxon.

(No. 3.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

GEOGRAPHY.

Time—Two Hours.

Examiner: James Hughes.

1. Describe the river systems of South America.

2. Draw an outline map of the chain of lakes between Canada and the United States, naming their connections; and locate accurately the following places:—Sarnia, Milwaukie, Oswego, Collingwood, Chicago, Kincardine, Cleveland, Detroit, Goderich, Thunder Bay, Windsor, Toledo, Duluth, Owen Sound, Silver Islet and Port Colborne.

3. Where and what are Batavia, Maggiore, Aden, Otranto, Tananarivo, Bulgaria, Natal, Negropont, Malaga, Gothland, Sydney, Funen, Pisa, Father Point, Cagliari, Yenikale, Aspinwall, Melbourne, Etna and Fontenoy.

4. Give the form of government, religion, and chief exports of the following countries:— Switzerland, Hindostan, Portugal, Buenos Ayres, Turkey, Persia, China, Brazil, Nubia and Japan.

5. Describe land and sea breezes, and explain their causes.

6. If the earth's axis were parallel with the plane of its orbit—(*a.*) What changes would be made in climate? (*b.*) Where would the Tropics be situated?

7. (*a.*) Why do we have high tides on opposite sides of the earth at the same time? (*b.*) Why do we not have two tides in 24 hours?

(No. 4.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

This Paper is not to be seen by the Candidates.

DICTATION.

TIME—ONE HALF HOUR.

Examiner: GEORGE W. ROSS.

Page 244, 5th Reader. From "O Faith!" to the end of selection.

READING.

See page 334, 5th Reader, from the top of the page to "Footprint."

(No. 5.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

1. Prove the rule for reducing a mixed circulating demand to an equivalent vulgar fraction.

Find *accurately* what fraction $\frac{5}{8}$ of $(\frac{7}{9} - .512)$ of $3.6\frac{77}{123}$ ac., is of $2.6\dot{6}260\dot{1}$ acres.

2. Shew how to find the L. C. M. of two or more numbers.

Find the L. C. M. of 483 bushels, 472 bushels 2 pecks ; 258 bushels, 3 pecks.

3. A merchant buys flannel at 32 cents per yard ; at what profit per cent. must he sell it in order that the money he receives for 220 yards, may be equal to his gain on $480 of outlay ?

4. Three watches hang side by side, and all show 12 o'clock at the time of observation ; the first is known to gain 10 minutes, and the second to lose 10 minutes in 12 hours, while the third keeps accurate time. When will all the *minute* hands be next at 12 together ?

5. How many ounces of coinage gold are equal in value to 112 ounces of coinage silver, 1869 sovereigns weighing 40lb troy, and 66 shillings weighing 1lb. troy ?

[OVER.

6. Distinguish between bank discount and true discount? If the simple interest on a sum of money for a given time and rate is $\frac{1}{n}$ of the sum itself, show that the true discount is $\frac{1}{n+1}$ of that sum?

7. Reckoning commercial discount at 5% a person would receive $44.52 less than the nominal value of a note which has a year to run; what should he receive for the note, if true discount only were deducted?

8. What must a person have invested in Bank of Commerce Stock at 120, and paying 4% half yearly dividends, if a transfer of 65% of his capital to Dominion Bank Stock at 130, and paying 4½% half-yearly dividends, makes a difference of $5 in his semi-annual income?

9. A merchant in Montreal, drew on Hamburg for 6000 guilders, at $.415; how much more would he have received if he had ordered remittance through London to Montreal, exchange at Hamburg on London, being 11¼ guilders for £1, and at London on Montreal, 9¼ %, brokerage being 1¼ % for remitting from London?

10. The length of an iron cylindrical vessel with closed ends is 3 feet, and its outside circumference is 36 inches, the metal being an inch in thickness. Find its weight when filled with water, iron being $7\frac{1}{9}$ times heavier than water, and water 62½ lbs. per cubic foot.

(No. 6.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

HISTORY.

TIME—TWO HOURS AND A HALF.

Examiner: S. ARTHUR MARLING, M.A.

N.B.—Marks will be deducted for bad spelling, and added for excellence in style.

1. From what existing circumstances would you infer the several invasions of Britain?

2. Narrate in a concise form the events which led to the Revolution of 1688.

3. Write short explanatory notes on Magna Charta, the East India Company, the Petition of Right, the Treaty of Limerick.

4. Name the great writers who adorned the reign of Elizabeth, and give a list of the works of any two of them except Shakespeare.

5. Enumerate the principal inventions and discoveries which have contributed to develop the commercial and industrial progress of Great Britain in modern times. Give the dates of these, and the names of the chief persons connected with them.

[OVER.

6. Define the position of the following places, and connect them with important events and dates in English History :—Agincourt, Naseby, Utrecht, Plassey, Saratoga, Trafalgar, Fontainebleau.

7. When did these persons live, and for what are they noted in history : Thomas à Becket, the Black Prince, Chief Justice Gascoigne, Judge Jeffries, Admiral Robert Blake ?

8. Name the principal events of the history of Canada in the period 1700–1750.

9. Give some account of Porsena and Coriolanus.

10. Sketch briefly the course of the first Punic war.

(No. 7.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

ALGEBRA.

TIME—TWO HOURS AND A HALF.

Examiner : J. A. McLELLAN, LL.D.

NOTE.—*Nine Questions will be considered a full Paper.*

1. Prove $x^{m} \div x^{n} = x^{m-n}$.

(1.) Simplify $(a+b+c)^3 - 3(a+b+c)c^2 + 3(a+b+c)c^2 - c^3$.

(2.) Divide $1 - 3xy - y^3 - x^3$ by $1 - x - y$.

2. Prove the rule for finding the L. C. M. of two quantities. Find the L. C. M. of—

(1.) $x^3 + 6x^2 + 11x + 6,\ x^3 + 6x^2 - 25x + 150$.

(2.) $a^3 + b^3 + c^3 - 3\,abc,\ (a+b)^2 + 2(a+b)c + c^2$.

3. Prove $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$.

Simplify $\left(\frac{1-x^2}{1-x^3} + \frac{1-x}{1-x+x^2}\right) \div \left(\frac{1+x}{1+x+x^2} - \frac{1-x^2}{1+x^3}\right)$.

4. Reduce to their lowest terms $\frac{a^{3m} + a^{2m} - 2}{a^{2m} + a^{m} - 2}$, and

$\frac{a(a+2b) + b(b+2c) + c(c+2a)}{a^2 - b^2 - c^2 - 2bc}$.

[OVER.

5. (1.) If $a^3 - pa^2 + qa - r = o$, then $x^3 - px^2 + qx - r$ is exactly divisible by $x - a$.

(2.) Prove that $(a+b+c)(bc+ca+ab)-(b+c)(c+a)(a+b)$ is divisible by abc. Is there any other divisor?

6. If $x = \left(\frac{a+b}{a-b}\right)^{\frac{2mn}{n-m}}$, then $\frac{1}{2}\frac{a^2-b^2}{a^2+b^2}(\sqrt[m]{x}+\sqrt[n]{x}) = \left(\frac{a+b}{a-b}\right)^{\frac{m+n}{n-m}}$

7. Solve the equations—

(1.) $\frac{3-2x}{1-2x} - \frac{5-2x}{7-2x} = 1 - \frac{4x^2-2}{7-16x+4x^2}$.

(2.) $3x - 2y = 5z - 6y = 7x - 4z = 1$.

*(3.) $\frac{x+3}{x+4} - \frac{x+1}{x+2} = \frac{4x+9}{2x+7} - \frac{12x+17}{6x+16}$.

8. A person going at the rate of p miles an hour, and desiring to reach home by a certain time, finds, when he has still r miles to go, that, if he were continuing to travel at the same rate, he would be q hours too late. How much must he increase his speed to reach home in time?

9. Of the three digits comprising a number, the second is double of the third; the sum of the first and third is 9, and the sum of the three digits is 17. Find the number.

10. A. owes B. \$$a$ due m months hence, and also \$$b$ due n months hence. Find the equation which determines the time at which both sums could be paid at once, reckoning interest at 5 per cent. per annum.

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* Candidates for 2nd Class Certificates *may* omit this equation.

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 8.)

BOOK-KEEPING

TIME—ONE HOUR AND A QUARTER.

Examiner: J. J. TILLEY.

1. In making out statements of "Resources and Liabilities" and "Losses and Gains," in which statement would you place each of the following accounts?—Note particularly any that you would place in both statements, with reasons:—

Cash, Mdse., Bank Stock, Expense, Real Estate, Rent, Shipment to A., A.'s Consignment.

2. Journalize, giving A.'s, B.'s and C.'s entries. (ruling not required on the paper).

July 1st. A. has this day discounted his note favour of B., (*a*) giving a cheque on the Bank for $300, an order on C. for $100, cash for balance. Face of note $600, discount allowed $30.

(*b*) A. shipped to B. $1,500 worth of goods, to be sold on account and risk of A. He takes $800 worth from his storehouse, and buys $700 worth from C., giving C. a cheque on the Bank in full. On sending the goods away, A. had them insured at $1\frac{1}{8}$ % on four-fifths of their value. paying premium in cash; and, on receiving the goods, B, paid freight, &c., per cheque $80.

[OVER.

(*c*) B. sold to C. $800 worth of goods from A.'s consignment, receiving in payment C.'s note at 3 mos. for $400—note to bear interest at 7 % per annum—a sight draft on A. for $200, which A. honours, and a cheque on Bank for balance.

(*d*) A. lost a $10 Bank Bill. Three days after, B. having found the Bill, returned it to A., and received $1.50 for his trouble.

3. Give Day-Book entries for the following :—

(*a*) Bank Dr.	$800.	
To A. B.		$450
" Bills Rec.		350

(*b*) Bills Payable Dr.	$400	
Interest "	50	
Expense "	100	
To Bank		$250
" A. B.		300

(*c*) A. B. Dr.	$300	
To Mdse.		$250
" Expense		50

(*d*) Cash Dr.	$800	
Bills Payable "	200	
To Good Will		$600
" Bills Rec.		400

4. Post all the items in No. 3, and make out a Trial Balance. How far is a Trial Balance a test of correct work? Illustrate your answer by reference to yours. Discuss the possibility of results as shown by your Trial Balance.

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 9.)

NATURAL PHILOSOPHY.

Time--Two Hours and a Half.

Examiner: J. A. McLellan, LL.D.

1. State the triangle of forces.

A weight of 100 lbs. is suspended by two flexible strings, one of which is horizontal, and the other inclined at an angle of 60° to the vertical; what is the tension of each string?

2. Show how a force can be resolved into two components at right angles to each other.

Show by a diagram how it is possible for a sailing vessel to make headway in a direction at an angle of 60° with that of the wind.

3. What is meant by the moment of a force with respect to a given point? State the principle of moments. The whole length of each oar of a boat is 10 feet, and from the hand to the rowlock the distance is 2 feet; each of your men sitting in the boat pulls his oar with a force of 60 lbs.; supposing the blades of the oar not to move through the water, find the resultant force propelling the boat.

4. A beam, the weight of which is 120 lbs., acting at a point one-fourth of its length from the foot is made to rest inclined at an angle of 45° against a smooth vertical wall (the other end resting on the ground) by a horizontal force applied to the foot: find this force.

[OVER.

5. Define centre of gravity, and show how the centre of gravity of a body may be experimentally determined.

A uniform triangular slab of marble weighing 120 lbs. is supported by three men at its angular points: find the weight supported by each man.

6. In a system of pulleys in which each pulley hangs by a separate string, there are three pulleys of equal weight; the weight attached to the lowest is 32 lbs., and the power is 11 lbs.: find the weight of each pulley.

7. Explain the principle of virtual velocities, and apply it to find the relation between the power and the weight in a lever of the second order.

8. Define specific gravity. A cylinder whose s. g. is ·6 floats in a fluid with $\frac{3}{5}$ of its bulk below the surface: find the s. g. of the fluid.

9. Describe the *forcing pump.*

The forcing pump being used to raise alcohol (s. g. = ·9) from a lower to a higher level, determine the number of feet which the distance between the lower valve and the surface of the fluid must not exceed, in order that the pump may act, supposing the barometer to stand at 30 inches and the s. g. of mercury to be 13.5.

10. Describe the syphon and explain the principle on which it acts.

Water is flowing out of a vessel through a syphon; what would take place if the pressure of the atmosphere were removed and afterwards restored. (1) when the lower end of the syphon is immersed in water, (2) when it is not?

(No. 13.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

EUCLID.

TIME—TWO HOURS AND A HALF.

Examiner—J. C. GLASHAN.

N.B.—*Algebraic symbols must not be used. Candidates who take Book II. will omit Questions 1, 2 and 6, marked thus * ; Candidates who take only Book I, will omit Questions 7, 8 and 9.*

*1. (*a.*) Which of the axioms in Euclid relate to geometrical magnitudes only ?

(*b.*) There are four cases in which Euclid proves two triangles to be equal in all respects, what are they ? Enunciate the omitted case of equality.

*2. To draw a straight line perpendicular to a given straight line of unlimited length from a given point without it.

A straight line drawn perpendicular to the base of an isosceles triangle through the middle point of the base, will pass through the vertex.

3. Any two sides of a triangle are together greater than the third side.

The straight line which joins the vertex of a triangle to the middle point of the base is less than half the sum of the two sides.

4. If a straight line falling upon two other straight lines make the exterior angle equal to the interior and opposite angle upon the same side of the line, the two straight lines shall be parallel to one another.

If two straight lines be either parallel or perpendicular to two other straight lines, each to each, the first pair make the same angles with one another, as the second pair.

[OVER.

5. Parallelograms and triangles upon the same base and between the same parallels are equal.

D, E, F, are the middle points of the sides of a triangle ABC and through A, B, C are drawn three parallel straight lines meeting EF, FD, DE, in *a*, *b*, *c* respectively, prove that the triangle ABC is double of the triangle *abc*, and that *bc* passes through A, *ca* through B, and *ab* through C.

*6. In any right-angled triangle, the square which is described on the side subtending the right angle is equal to the squares described on the sides which contain the right angle.

If upon the sides AB, AC of any triangle ABC, there be described any parallelograms ABGF and ACED, if the sides GF and ED meet in H, and HA be joined, and if finally upon the third side BC of the triangle a parallelogram BCMN be described whose side BN is equal and parallel to HA, then shall the parallelogram BCMN be equal to the parallelograms ABGF and ACED together. (*Pappus.*)

7. If a straight line be divided into any two parts, the squares on the whole line and on one of the parts are equal to twice the rectangle contained by the whole line and that part together with the square on the other part.

Produce a given straight line so that the sum of the squares on the given line and the part produced shall be equal to twice the rectangle contained by the whole line thus produced and the part produced.

8. If a straight line be divided into two equal and also into two unequal parts, the squares on the two unequal parts are together double of the square on half the line and of the line between the points of section.

Divide a given straight line into two parts such that the square on one of them may be double of the square on the other.

9. To divide a given straight line into two parts so that the rectangle contained by the whole line and one of the parts shall be equal to the square on the other part. (*The golden section.*)

To produce a given straight line to a point such that the rectangle contained by the whole line thus produced and the part produced shall be equal to the square on the given straight line.

(No. 14.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE

COMPOSITION.

TIME—AN HOUR AND A QUARTER.

Examiner: J. M. BUCHAN, M.A.

Candidates may select any one of the following topics:—

The education that is given outside of the school-room.

The great North-West.

" All the world 's a stage,
And all the men and women merely players."

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 15.)

CHEMISTRY.

TIME—ONE HOUR.

Examiner—J. A. McLELLAN, LL.D.

1. Give two methods of preparing Hydrogen. By what experiments would you show its most important properties?

2. How would you prepare Nitric Acid? Describe any experiments with Nitric Acid which you have seen.

3. State the different forms in which Carbon occurs in nature. Port wine filtered through charcoal is deprived of its color; give the reasons of this. How is charcoal used as a disinfectant? Give the theory of its action.

4. How would you prepare Carbonic Acid from Chalk and Sulphuric Acid? Express the reaction by an equation. Bread is raised by the liberation of Carbonic Acid. Explain.

5. What is meant by combustion? Explain fully the substances formed when a candle is burned (1) in oxygen, (2) in a limited supply of air.

6. Write down the formulæ and molecular weights of water, ammonia, hydrochloric acid, sulphuric acid, ferrous sulphate, phosphoric acid.

7. (1) How many grams of oxygen are required to burn 24 grams of carbon and 32 grams of sulphur?

   (2) How many lbs. of zinc are there in 350 lbs. of zinc sulphate?

8. Describe any two experiments which you have performed yourself, and the purpose for which you performed them.

9. How would you obtain chlorine from common salt? Give the equation respecting the reaction. Describe any experiments with chlorine you may have seen.

(No. 16.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS.

BOTANY AND PHYSIOLOGY.

TIME—ONE HOUR.

Examiner: J. J. TILLEY.

1. Describe the different parts of a flower, and give the use of the stamens and pistils. What peculiarity in the structure of pendent flowers, as the Fuchsia?

2. Explain the mode of life of biennial plants.

3. Describe the process of absorption, transpiration, and assimilation, as carried on in plants.

4. Describe two of the following: the human stomach, the skin, aorta, optic nerve.

5. Give the use of the epiglottis, mesenteric glands, pancreas, tendons, capillaries, synovia.

6. Write short notes on one of the following subjects: muscles, circulation, respiration.

No. 17.

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST AND SECOND CLASS TEACHERS.

MUSIC.

TIME—AN HOUR AND A QUARTER.

Examiner: JAMES HUGHES.

1. Define Interval, Unison, Ledger lines, Octave, Cleff, Measure, Bar, Voice Register.
2. Explain the difference between the Chromatic and Diatonic Scales.
3. Give the order of tones and half tones in a Major Diatonic Scale, and construct the scales of *re*, *la*, and *mi* ♭, giving their signatures.
4. Why may two intervals of the same name be of different lengths ?
5. Fill a measure of $\frac{3}{4}$ time in as many ways as possible.
6. Make the crotchet and quaver rests, and show how they may be prolonged.
7. Name the four classes of voices, and explain the difference in their registers.
8. What notes constitute the common chord ?
9. Explain the difference between Melody and Harmony.

(No. 18.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS.

EDUCATION AND SCHOOL LAW.

TIME—TWO HOURS.

Examiner: GEO. W. ROSS.

1. Discuss the proper method of conducting class recitation: (*a*) As to position of the class; (*b*) Management; (*c*) Object.

2. You have a reading class of fourteen pupils. Time at your disposal, half an hour. Lesson to be read for the first time. How would you occupy your half hour?

3. What do you mean by a school well organized—(*a*) As to classification; (*b*) Discipline?

4. There is no grander thing in all the universe than a strong, decided, self-reliant and independent character. Strength of will, decision of purpose, independence of action and thought—these form the levers that move the world—(*Prof. Woods*). Show how the teacher is responsible for the development of these qualities.

5. In what way has the law been changed—(*a*) Regarding the issue of second class certificates; (*b*) The extent of school accommodation?

6. What are the duties of trustees—(*a*) In the matter of school accommodation; (*b*) Annual reports; (*c*) Calling special school meetings; (*d*) Auditing school accounts.

7. A school corporation wishes to borrow $2000 for the erection of a new school-house. What is the legal mode of procedure?

(No. 19.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

SECOND CLASS TEACHERS.

DRAWING.

TIME—ONE HOUR AND A QUARTER.

Examiner: JAMES HUGHES.

1. Explain how to draw an ellipse. Apply this form in drawing a circular box, with its lid leaning against it.

2. Draw an arched bridge, and give full explanations of the method of teaching the subject to a class, showing the necessary construction lines (eye opposite the centre of the arch).

3. Draw a Gothic window set in masonry. Give definite instructions about the arch, and the arrangement of the stones around it.

4. Draw a Roman cross, showing its thickness. 1st, with the eye *below* it and to the *left*; 2nd, with the eye *above* it and to the *right*.

5. (1) Draw an oblong twice as long as it is wide, the end lines being faint. (2) By a faint line divide the oblong into two squares. (3) Divide each square vertically into two equal oblongs by faint lines. (4) Draw two diagonals in each oblong thus made. (5) Draw a small rhombus above and below the intersections of these diagonals, using parts of the diagonals as two sides of the rhombus in each case. (Let the side of the rhombus be equal to one-eighth of the diagonal).

(No. 20.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

COMPOSITION.

TIME—ONE HOUR AND A QUARTER.

Examiner : GEO. W. ROSS.

Select any one of the following themes :—

1. The horrors of War.
2. School Vacations.
3. How to get on in the World.

Value of Paper, 75 marks.

(No. 21)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

GEOGRAPHY.

TIME:—TWO HOURS.

Examiner: **J. J. TILLEY.**

Values.

15 1. Define mathematical geography, planet, longitude, ecliptic, glacier, plateau, bayou, haven, lough, canal.

12 2. Give in degrees the width of the different zones, and account for the width of the torrid zone.

12 3. Compare the longitude of two places, A and B, the time in the former being one hour and forty minutes behind that in the latter.

18 4. Describe the physical geography of Europe, and note the most prominent features of uniformity.

15 5. Describe the principal river-slopes of the United States.

15 6. Give the physical features of New Brunswick, British Columbia, and Manitoba.

24 7. Locate and give the political relation of the following islands: Miquelon, Azores, St. Joseph, Hayti, Bermudas, Ascension, Heligoland, Cumino, Mauritius, Oland, Laaland, Labuan.

15 8. Name the British possessions in the Eastern hemisphere.

24 9. Name the cities on the following rivers:—St. Lawrence, Potomac, James, Rhone, Severn, Clyde, Suir, Rhine, Maritza, Ganges.

(No. 22.)

Education Department, Ontario.

JULY ENAMINATIONS, 1877.

THIRD CLASS TEACHERS.

ARITHMETIC.

TIME—THREE HOURS.

Examiner: J. A. McLELLAN, LL.D.

1. If 69 German Thalers, of which 9 parts in 10 are fine silver, weigh 41 ounces, what is the value of a Thaler in English money when standard silver, of which 37 parts in 40 are fine, is worth 5*s.* $1\frac{1}{2}$*d.* per ounce?

2. A, B, and C can do a piece of work in 2 days, A and C in

$$6\left(\frac{7\frac{2}{9} \text{ of } 12\frac{2}{3}}{2\frac{8}{9} \text{ of } 15\frac{5}{6}}\right) - 3\left(\frac{2\frac{1}{7} \text{ of } 4\frac{1}{3}}{2\frac{11}{14} \text{ of } 2\frac{1}{2}}\right) \text{ days;}$$

in what time can B do it alone?

3. A certain kind of brass is made by fusing together old brass, refined copper, and zinc, in the proportion of 33, 55, and 24; how much of each must be taken to produce 170 lbs. of brass, after allowing $2\frac{6}{7}$ per cent. for waste?

4. March 21st, 1877; sterling exchange is quoted at $9\frac{3}{4}$ for demand bills; what must be paid for a demand bill for £18 5*s.*?

5. What will be the cost of insuring a ship worth \$$48628\frac{1}{6}$, at $3\frac{1}{3}$ per cent., so that in case of loss the owner may recover the value of the ship, and the amount paid for insurance?

6. The numerator of a certain fraction is a fifth as much again as its denominator, and the sum of the numerator and denominator is 352. Find the fraction.

[OVER.

7. A room whose height is 12 feet, and length $1\frac{1}{6}$ times its width, takes $178\frac{2}{7}$ yards of paper 1 ft. 9 in. wide to cover its walls; what will it cost to cover the floor with carpet 27 in. wide and costing $1.75 a yard?

8. The L. C. M. of two numbers is 634938944494, and their G. C. M. is 9187: one of the numbers is 85044059; find the other.

9. The difference between the interest and the discount of a sum of money for 1 year and 9 months, at 8 per cent., is $9.80: find the sum.

10. A rectangular field whose length is three times its breadth, contains 6 acres 900 yards: find its length and breadth,

Note.—20 marks to be allowed for each question.

(No. 23.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

HISTORY.

Time—Two Hours and a Half.

Examiner: J. M. Buchan, M.A.

Values.	
18	1. Give an account of the chain of events which led to the signing of the Great Charter in the reign of John. State the provisions of Magna Charta, as far as you know them.
12	2. Name the great English Universities, and tell where they are situated. What were the leading studies pursued in them during the middle ages, and in the latter part of the Tudor period?
15	3. Tell what you know about the condition of the Agricultural Labourer, the Burgher, and the Mendicant Friar, in the reign of Richard II.
18	4. Tell what you know about the introduction of Printing into England, and the invention of the Steam-engine and the Spinning-jenny.
18	5. Sketch the history of the reign of William III.

[OVER.

Values.

26 6. State in what reign each of the following events occurred :—

The battles of Crecy, Lewes, Bannockburn, Culloden, Bunker's Hill, and Naseby.

The Treaties of Utrecht, Troyes, and Ryswick.

The passing of the Habeas Corpus Act, and the first poor-law.

The publication of " Paradise Lost," and Adam Smith's " Wealth of Nations."

35 7. Tell what you know about Earl Godwin, Thomas-à-Becket, Earl Warwick the king-maker, Cardinal Wolsey, Sir Robert Walpole, William Shakespeare, and Jacques Cartier.

8 8. What was the extent of the Roman Empire when England was a part of it ?

(No. 24.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

DICTATION.

TIME—HALF AN HOUR.

Value—75.

Examiner: G. W. Ross.

5th Book, pages 369—370. From "To go through the grammar," to "Those works are the best."

No. 25.

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

ENGLISH GRAMMAR AND ETYMOLOGY.

TIME—THREE HOURS.

Examiner: S. ARTHUR MARLING, M.A.

Values.

"But *what* would appear *incredible* to you, *were* the fact less public and notorious, *is*, that a gang of hardened villains, *who* had been confined, and *got out of* prison when the wall fell, *at* the first shock, *were* busily employed in *setting* fire *to* those buildings which *stood* some chance of *escaping* the general *destruction*."—(DAVY.)

20 1. Divide this passage into propositions, stating their kind and their relation to one another, and fully analyze them.

45 2. Parse the words printed in italics.

14 3. Give the meaning of the Latin prefixes and affixes in the above extract.

22 4. Why are certain verbs called *irregular*? By what other names are they also known, and why? Write the present tense third person singular, also the present participle, the past tense second person singular, and the past participle of shear, slay, chide, eat, win, sit, lie, lose, die, spit.

16 5. Give examples to show the indefinite and also the definite use of the pronouns he, it, one, who.

[OVER.

Values.

14 6. Write the plural of simile, spoonful, seraph, court-martial, portfolio, James, crisis, x, 5; distinguish farther and further, older and elder, latest and last; and say what kinds of adjectives cannot be compared.

15 7. What is the difference in meaning between "he is gone," and "he has gone;" "you care for him more than I," and "you care for him more than me;" the possessive with *of*, and the possessive with *'s*?

12 8. Explain what is meant by Gender, Case, Mood, Word, Etymology, Construction of Sentences.

24 9. Correct any of the following that appear to you to be wrong, giving your reason in each case:—

(*a*) Who did I give Burns' poems to? 'Twas me.

(*b*) A person cannot always be sure of not missing their way.

(*c*) His wife as well as his children were lost in the vessel.

(*d*) A slight misunderstanding has arose between the three partners.

18 10. Correct, where necessary, the spelling of disappoint, seized, dissapates, accomadate, metalic, shriek, distruction, delapidate, your's, leveling, develop; and accentuate irreparable, perverse, sojourn, Newfoundland, machinist, indisputable.

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

THIRD CLASS TEACHERS.

ARITHMETIC.

ANSWERS.

1. $35\frac{473}{851}$ pence.
2. $2\frac{2}{3}$ days.
3. $51\frac{9}{16}$ lbs., $85\frac{15}{16}$, $37\frac{1}{2}$.
4. \$$89\frac{7}{360}$.
5. \$$1676\frac{5}{6}$.
6. $\frac{192}{160}$.
7. \$98.
8. 68590142.
9. \$570.
10. 299·69 + yds., 99·89 + yds.

(No. 27.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

COMPOSITION.

TIME—ONE HOUR.

Examiner: GEO. W. ROSS.

Write on one of the following themes:—

1. Our School System.
2. The pleasures of a poetic taste.
3. Our Country.

(No. 28.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

GEOGRAPHY.

TIME.--TWO HOURS.

Examiner: J. J. TILLEY.

1. Classify stratified rocks into periods and systems.

(*a*) In which systems is coal found?

(*b*) Name the lowest system in which fossil remains of birds are found?

(*c*) If Trilobites are found, should coal be expected below? Give reasons for your answer.

2. Explain how the surplus snow above the snow-line is carried off.

3. Explain (I.) Why the snow line is lower in the southern hemisphere than it is in the northern in equal latitudes; and (II.) Why is it higher at 20° from the equator than it is at the equator.

4. Compare the main axes of land elevation in the Old World with those in the New.

5. Describe the Great Northern Plain of the Old World.

6. Describe the principal constant and periodical winds.

7. Account for the large vegetable growth found near the west coast of Norway and of North America.

8. For what are the following places chiefly noted:—Hull, Southampton, Belfast, Cork, Dundee, Stirling, Toulon, Nantes, Elsinore, Ghent, Auckland, Funchal?

9. Write brief notes on the principal commercial and manufacturing centres of Canada.

(No. 29.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

PHYSIOLOGY AND ZOOLOGY.

Time—Two Hours.

Examiner: James Hughes.

1. (*a*) Explain the process of circulation.

(*b*) What is the shortest course by which a drop of blood can return to the right auricle after leaving the left ventricle?

(*c*) Why is it so dangerous to drink freely of cold water when the body is over-heated?

(*d*) A pupil is bleeding profusely. How would you decide whether he had severed an artery or a vein? If an artery, what course would you adopt?

2. Describe the structure of the eye, and mention the uses of its most important parts.

3. (*a*) Name the four classes of substances of which the food is composed. (*b*) Which are *essential?* (*c*) Why would a person fed only on Fats, Starches, Sugar, Dextrine, and Gums gradually die of starvation?

4. When is it particularly injurious to study hard? Give reasons for your answers.

5. (*a*) Describe the circulation of reptiles. (*b*) How do reptiles re-produce themselves?

6. (*a*) Give the general characters of the mammalia. (*b*) Which mammals have no hair when grown up, and no external ears?

[OVER

7. (*a*) Explain the nature and objects of the peculiarities in the skeletons of birds. (*b*) What means are adopted to reduce the specific gravity of their bodies?

8. Give the sub-kingdom, class and order of the following:—Gorilla, Rabbit, Bear, Buffalo, Owl, Pigeon, Stork, Parrot, Alligator, Turtle, Salmon, Clam, Lobster, Beetle, Butterfly.

(No. 30.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

EUCLID.

TIME—THREE HOURS.

Examiner: J. C. GLASHAN.

N.B.—Algebraic symbols must not be used.

1. The angles in the same segment of a circle are equal to one another.

If the diagonals AC, BD of the quadrilateral ABCD inscribed in a circle, the centre of which is at O, intersect at right angles in a fixed point P, prove that the feet of the perpendiculars drawn from O and P to the sides of the quadrilateral lie on a fixed circle the centre of which is at the middle point of OP.

2. To inscribe a circle in a given triangle.

If the circle inscribed in a triangle ABC, touch the sides AB, AC in the points D, E, and a straight line be drawn from A to the centre of the circle, meeting the circumference in G, shew that G is the centre of the circle inscribed in the triangle ADE.

3. The sides about the equal angles of triangles which are equiangular to one another are proportionals; and those which are opposite to the equal angles are homologous sides, that is, are the antecedents or consequents of the ratios.

If perpendiculars be drawn from any point on the circumference of a circle to the sides of an inscribed quadrilateral, the rectangle under the perpendiculars on two opposite sides is equal to the rectangle under the other two perpendiculars.—(*Pappus' Theorem*).

4. If four straight lines be proportionals, the rectangle contained by the extremes is equal to the rectangle contained by the means; and if the rectangle contained by the extremes be equal to the rectangle contained by the means, the four straight lines are proportionals.

To bisect a triangle by a straight line drawn through a given point.—(*Apollonius*).

5. Similar triangles are to one another in the duplicate ratio of their homologous sides.

To bisect a triangle by a straight line drawn parallel to a given straight line.

(No. 31.)

Education Department, Ontario

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

EDUCATION.

TIME—TWO HOURS.

Examiner: GEO. W. ROSS.

1. What should be a Teacher's habits, (1) as to health, (2) study (3) morals ?

2. What incentives to study do you consider legitimate, and which the most effective ?

3. Sketch the *history*, design and object of the "Kindergarten."

4. Cramming is a species of intellectual feeding which is neither preceded by appetite nor followed by digestion (Prof. Blackie). Discuss this in connection with the Teacher's daily work.

5. Discuss the relative value of Reading and Arithmetic properly taught, as an intellectual exercise.

6. How would you deal with the following cases :—(1) indifference to study. (2) truancy. (3) neglect of home work.

7. You are appointed master of a Village School, classified as follows :—1st reader, 20 pupils ; 2nd, 35 ; 3rd, 25 ; 4th, 40 ; 5th, 30. How would you organise such a school with two assistant Teachers ?

8. You are appointed a Public School Inspector : what points would you consider most important in your Inspection of a Public School ?

(No. 32.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

1. Define and investigate methods of finding the G. C. M., and the L. C. M. of two or more fractional numbers.

Three watches hang side by side and all show 12 o'clock at the time of observation; the first is known to gain 10 minutes, and the second to lose 10 minutes in 12 hours, while the third keeps accurate time. In what time will *all* the hands first be at 12 together?

2. A grocer bought a quantity of tea at 40 cents per lb., and fixed a price on it, to gain $23\frac{17}{21}$ per cent., but in selling it he inadvertently used a pound weight which was $\frac{3}{4}$ oz. too light, thus gaining $31.20 more than he would have gained if the weight had been true. How much did he buy?

3. Show that if the true discount of a sum of money for a given time and rate be $\frac{a}{b}$ of that sum, then the interest will be $\left(\frac{a}{b-a}\right)$

(1) The interest on a certain sum for 6 years is $261, and the discount for the same time is $180. Find the sum and the rate per cent.

(2) The interest on a certain sum is $180, and the discount for the same time and rate is $150. Find the sum.

[OVER.

4. How much U. S. currency will be required to purchase U. S. 6 % bonds, interest payable in gold, to give an income of $1,113 in currency, gold being at 106, and the broker's commission $\frac{3}{8}$ % on the par value of the bonds?

5. I bought a quantity of tea from Thwaite, Eby & Co., Toronto, who allowed me a discount of 4 per cent. on the price charged for the tea and accepted for the reduced amount my note payable in 6 months; I sold the tea at once for a note of $510.51 payable in 3 months, and allowing money to be worth 8 % per annum, I found I had made a profit of $18\frac{2}{11}$ per cent. Find the price first charged for the tea.

6. From 2 lbs. of standard gold are coined 89 guineas, and from 1 lb. standard silver 66 shillings, $8\frac{1}{3}$ % of standard gold being alloy, and $7\frac{1}{2}$ % of standard silver. If 24 pennies are coined from 1 lb. avoirdupois, calculate the ratio of the values of gold and copper.

7. Find the compound interest on $4000 at 10 % for $3\frac{1}{2}$ years (payable yearly).

8. A man invested a certain sum in Bank of Commerce Stock at 125 and paying $4\frac{1}{4}$ % half-yearly dividends; 44 % *more* than that sum in Dominion Bank Stock at 135 and paying $4\frac{1}{2}$ % half-yearly dividends; and $39\frac{1}{5}$ % *less* than that sum in Consolidated Bank Stock at 95, and paying $3\frac{1}{4}$ % half-yearly dividends; his half-yearly income from the second investment was $12.75 less than from the other two together. Find the amount invested in each kind of Stock.

9. To do a certain piece of work, for which $120 is paid, B would take $2\frac{2}{3}$ times as long as A and C together, C $4\frac{1}{2}$ times as long as A and B together, and all three working together actually do the work in $2\frac{2}{3}$ days. Divide fairly among them the money paid for the work.

10. (1) The base of an equilateral triangle falls on the diameter of a semicircular arc, and its vertex is in the middle point of the arc; the length of a side of the triangle being 8 feet, find the diameter of the circle.

(2) The town A is 30 miles from B, B 25 miles from C, and C 20 miles from A; find where a house must be erected to be equally distant from A, B, and C.

No. 33.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

BOTANY, AGRICULTURE, AND DOMESTIC ECONOMY.

TIME.—TWO HOURS.

Examiner: J. M. BUCHAN, M.A.

1. Give an account of the various means by which cross-fertilization is secured.

2. Describe the composition and properties of protoplasm, and tell what part it plays in vegetable organisms.

3. Explain the structure of the sting of the nettle, showing how the irritation caused by it is produced.

4. State wherein gymnospermous plants differ from other phanerogams.

5. State the theories held as to the origin of species.

6. Sketch a vertical section of a flower of the Mallow Family.

7. Explain the terms *rhizome*, *plumule*, *cotyledon*, *achene*, *corymb*, and *catkin*.

8. Explain how you would feed cattle in order—

(i.) To fatten them.

(ii.) To obtain the largest possible quantity of milk.

(iii.) To obtain milk of the best possible quality.

(iv.) To obtain the largest possible return in cheese.

[OVER

9. State when it is advisable—

(i.) Not to plough deep.

(ii.) To use the subsoil plough.

(iii.) To drain.

10. Explain the value of lime as a manure, and state on what soils it is most advantageous. Give the chemical composition of quick lime, slaked lime, mild lime, limestone, and chalk. What is marl ?

11. Under what circumstances is ammonia known to be produced naturally ? Explain its importance in regard to the vegetable world.

Female Candidates may, if they choose, substitute the following Questions for Questions 8, 9, 10, and 11.

12. How would you proceed in order to—

(i.) Cook a beefsteak.

(ii.) Poach eggs.

(iii.) Make good toast.

(iv.) Prepare a nice dinner in the month of July at a farmhouse, where the only meat procurable is fat salt pork. *N.B.*—Nothing expensive is to be used, and nothing that cannot usually, or at least easily, be had in a farmhouse.

13. Why should a house be ventilated and beds aired ?

14. Point out the advantages and disadvantages of having many windows in a house.

(No. 34.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

ENGLISH GRAMMAR AND ETYMOLOGY.

TIME—THREE HOURS.

Examiner: S. ARTHUR MARLING, M.A.

Hail, holy Light! offspring of Heaven first-born,
Or of the Eternal co-eternal *beam*
May I express thee unblamed? Since God is light
And never *but* in unapproached light
Dwelt from eternity, *dwelt then* in thee,
Bright *effluence* of bright essence increate.
Or hear'st thou rather pure ethereal *stream*,
Whose fountain who shall tell? Before the sun,
Before the heavens thou *wert*, and at the voice
Of God, as *with* a mantle, didst invest
The rising world of waters dark and deep,
Won from the void and formless infinite.
Thee I revisit now with bolder wing,
Escaped the Stygian pool, though long detained
In that obscure sojourn, while in my flight,
Through utter and through middle darkness borne
With other notes than *to* the Orphean lyre
I sung of Chaos and eternal Night.

MILTON, PAR. LOST, B. III.

1. (*a*) Parse the words in italics.
   (*b*) Analyse the subordinate propositions.
   (*c*) Explain the references in 'rising world,' 'Stygian pool,' 'Orphean lyre,' 'utter and middle darkness.'
   (*d*) Re-write in prose lines 2–8, bringing out the meaning fully.
   (*e*) Give the derivation of 'hail,' 'blame,' 'essence,' 'rather,' 'heavens,' 'utter,' 'since,' 'and,' 'void,' 'Chaos.'
   (*f*) Point out and explain the figures of speech employed in the above passage.

[OVER.

2. Write a short account of the origin and use of the auxiliaries 'shall' and 'can,' and explain such forms as '*I have written* a letter,' 'methinks.'

3. Scan the 6th line of the passage; also the following, giving the name of the metre:

(*a*) Arethusa arose from her couch of snows
In the Acroceraunian mountains. SHELLEY.

(*b*) Hail to thee, blithe spirit! ID.

(*c*) Faultily faultless, icily regular, splendidly null.
TENNYSON.

(*d*) He died in dungeon cold and dim, by Alphonso's
base decree. LOCKHART.

4. Parse the italicised words in the following sentences from Shakspere:

(*a*) Would ye have me
Put my sick cause into his hands *that* hates me?
(*b*) I long
To have this young one *made* a Christian.
(*c*) *The* fewer men *the* greater share of honour.
(*d*) Though all that I can do is *nothing* worth.
(*e*) Since naught so stockish, hard, and full of rage
But music for the time doth change *his* nature.

5. What different views are entertained by grammarians with regard to the office of conjunctions? Give examples which seem to you to define that office.

6. Re-write the following passage, substituting words of Saxon for those of classic origin:—"Many peculiar causes in the situation and character of Henry the Seventh augmented the authority of the crown. Most of these causes concurred in succeeding princes; together with the factions in religion and the acquisition of the supremacy, a most important article of prerogative." HUME.

7. Explain the derivation of these words: Candidate, miscreant, sycophant, ambition, Gloucester, tribulation, Whitby. What objection to '*cablegram*'?

8. Examine the syntax of the following, giving corrections where necessary:—

(1) 'Ye will not come unto me that ye might have life.'
(2) 'The greatest number of students came up to that examination of any former year.'
(3) 'Wanted, a nurse and housemaid who must both have good references.'

(No. 35.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

PHYSICS.

TIME—TWO HOURS.

Examiner—J. C. GLASHAN.

1. "The very law which moulds a tear,
  And bids it trickle from its source,
That law preserves the earth a sphere,
  And guides the planets in their course."

What is the force which 'moulds a tear,' and what the force which 'guides the planets ?'

Explain how it is that a globule of mercury can float on water.

2. How can the velocity of sound in a gas be experimentally determined? How can it be determined in a short rod?

A cubic foot of air at 32° F, and a pressure of 2116.4 lbs. to the square foot, weighs .080728 lbs., the ratio of increase of elasticity on account of heat of compression is 1.404: find the velocity of sound in air at 32° F.; $g = 32.17$.

3. What is meant by specific heat and what by atomic heat ? In exhibiting the conversion of mechanical energy into heat by hammering a metal, what metal would be the best to select for the experiment, and why ?

The specific heat of water is four and a fifth times, and its density 773 times that of air. Supposing a cubic mile of water to yield up one degree of its heat, by how many degrees would it suffice to heat 100 cubic miles of air.

4. Describe fully some one experiment by which the mechanical equivalent of heat has actually been ascertained.

If the heat evolved in the burning of one pound of coal is capable of raising 100lbs of water from 70° F, to 186° F, required the mechanical equivalent of the amount of heat evolved in the burning of one ton of such coal.

[OVER.

5. What is the relation between refrangibility and wave lengths? Describe the structure of an achromatic combination of lenses.

A series of concave lenses each of focal length 31, are placed with their axes coincident, and such that the interval between the rth and the $(r+1)$th lenses, is equal to the distance of the focus after the rth refraction from the rth lens. If the original pencil be parallel, prove that the distance of the 5th focus from the 5th lens is 16.

6. Describe briefly the structure and use of the spectroscope. What are the lengths of the A and the H_2 Fraunhofer lines? How are these lengths measured?

Which are the primary colours? How do you explain the colour of a mixture of two fine powders, one blue the other yellow?

7. Describe the Leyden jar. What is meant by the residual charge? Give an explanation of its cause.

A battery of Leyden jars was connected with a spark micrometer, and when a certain charge had been given the battery, a spark passed between the balls at the distance of half an inch. The balls were afterwards brought to within $\frac{1}{12}$ of an inch and a second spark passed. What part of the entire charge was the residual charge.

8. State Ohm's Law, and explain the terms used.

The resistance of 160 yards of iron wire of diameter .13 was found to be 2.1 Ohms. Compare the conductivity of this wire with that of pure copper.

9. Describe a Daniell's cell, the rheostat, and the tangent galvanometer.

A tangent galvanometer, a rheostat, and a Daniell's cell were joined in circuit and by adjusting the resistance, a deflection of 45° was obtained. On introducing 30 more turns of the rheostat wire the deflection was reduced to 40°. A Grove's cell was then substituted for the Daniell's, and the resistance adjusted till the deflection was 45° To reduce the deflection to 40°, it was necessary to introduce 50 turns of the rheostat wire. Compare the electromotive forces of the Daniell and Grove cells.

10. What is the most advantageous manner of arranging 24 cells of E. M. F. 20 and resistance 12, to overcome a resistance of 18?

Eight of the above questions will be counted a full paper.

(No. 36.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

NATURAL PHILOSOPHY.

TIME—THREE HOURS.

Examiner: J. C. GLASHAN.

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1. Define *force*. How is it measured ?

A mass of 18 oz. lies on a horizontal table. Attached to this mass, by a string passing over a pulley at the edge of the table, hangs a mass of 6 oz. Find the accelerative effect of the weight of the latter mass, assuming the table and the pulley to be perfectly smooth, the string to be weightless and perfectly flexible, and g, the accelerative effect of gravity, $=32$.

2. Explain how velocity and rate of change of velocity are measured.

A velocity of 20 yards per minute is changed uniformly in one second to a velocity of twenty-two and a half miles per hour; express numerically the rate of change in feet and seconds.

3. State Newton's Laws of Motion.

(*a*) What is meant by *motion* in the Second Law, and how is it measured ?

(*b*) How is *action* measured ?

From the Second Law deduce that when a body moves with uniform velocity in a circle, the force acting on the body is directed towards the centre, and is equal to the product of the mass of the body into the square of the velocity divided by the radius of the circle.

[OVER.

4. Deduce the parallelogram of forces from Newton's Laws of motion.

The resultant of forces 7, 1, 1, 3 acting from one angle of a regular pentagon towards the other angles taken in order, is $\sqrt{71}$.

5. What is a couple ? Prove that if the moments of the forces composing a couple are taken with respect to any point in the plane, the sum is constant both in sign and magnitude.

A weight of given magnitude moves along the circumference of a circle in which are fixed two other weights. Prove that the locus of the centre of gravity of the three weights, is a circle.

6. State the laws of friction, and describe some method of verifying them experimentally.

Solve the rider to Quest. 1, assuming the co-efficient of friction between the first mass and the table to be 1/6, the other conditions remaining the same.

7. State the law of stability of flotation,

What weight of lead of specific gravity 11.4 attached by a fine cord to one end of a uniform rod of length 6 feet, weight $6\frac{1}{2}$ lbs., and specific gravity ·64 will cause it to float in water, with its axis vertical ?

8. Define the measure of the elasticity of a fluid. Prove that if the elasticity is equal to the pressure, the pressure is inversely proportional to the volume.

There are two barometers, one in perfect order in which the mercury stands at a height of 30 in., the other with an imperfect vacuum of 9 in. above 25 in. of mercury. If it were possible for the force of gravity to become less by a quarter, what would be the effect on these barometers ?

(No. 37.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

SCHOOL LAW.

TIME—ONE HOUR AND A QUARTER.

Examiner: JAMES HUGHES.

1. On what condition may non-resident children attend any school?

2. State the steps necessary to be taken in order to secure the establishment of township boards of trustees.

3. When and how may a by-law for the establishment of township boards be repealed, and section boards substituted.

4. How may third class certificates be renewed?

5. How may a vacancy be formed in a trustee board?

6. When is it necessary for the trustees of rural schools to consult the assessed freeholders and householders of their section?

7. (*a.*) Who should enforce the compulsory clauses of the School Act? (*b*) What legal excuses may parents urge for not sending their children to school, and who should decide whether such excuses should be accepted or not?

8. What steps should be taken by a ratepayer to secure the transfer of his property from one school section to another?

(No. 38.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

HISTORY.

Time—Three Hours.

Examiner : S. Arthur Marling, M.A.

Note—In valuing the answers to this paper, marks will be given or deducted for style.

1. Show by examples the influence of the geography of Greece upon its political and social development.

2. Enumerate the causes which produced the Peloponnesian war, and sketch the course of that war subsequent to the Syracusan expedition. Be concise.

3. " The Semitic races could no longer dispute the dominion of the Mediterranean lands with the Aryans." (*Freeman.*)

(*a*) Compare the races here mentioned.

(*b*) What events justify the statement ?

4. Describe briefly the Roman Empire under Augustus, in reference to (*a*) its geographical extent, (*b*) its political features, (*c*) the literary character of the reign.

5. What is meant by the Royal Prerogative ? How was it employed by Henry VIII. and Elizabeth respectively ? Give examples.

6. What was the domestic policy of Thomas Cromwell ? With what French statesman is he compared, and on what grounds ?

7. Give a view of the writings of Sir Thomas More, and justify this remark by Mr. Green : "The most important social and political discoveries of modern times have been anticipated by the genius of Thomas More."

[OVER.

8. Describe the foreign policy of Queen Elizabeth.

9. What causes retarded the prosperity of Ireland under the Plantagenets?

10. Compare the Constitution of Canada with that of the United States.

11. Short notices of Champlain and de Frontenac.

(No. 39.)

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JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

CHEMISTRY.

TIME—TWO HOURS.

Examiner: J. A. McLELLAN, LL. D.

1. Distinguish between atomic, equivalent, and molecular weights. Give the atomic and equivalent weights of mercury, zinc, chlorine, iodine, sulphur, iron, and copper. Write down the molecular weights of H_2S, PCl_5, $As\,H_3$, H_2SO_4.

2. Enumerate very briefly the various methods by which atomic weights may be determined; and indicate in the case of each of the following elements the method or methods which would be applicable—oxygen, chlorine, carbon, sulphur, lead, arsenic.

3. Halfapound of pure zinc is put into a vessel containing a small quantity of water; H_2SO_4 is then added in quantity just sufficient to dissolve the zinc, and leave no free acid: name, describe briefly, and give the exact weight of all the resulting products, whether gaseous or solid, the superfluous water being evaporated.

4. Draw a diagram representing the structure of flame, and explain briefly. Of three lamps, one is burning in the ordinary way, another has the wick turned up so high as to give off a large amount of smoke, while the third is so much agitated by the wind as to be rendered almost non-luminous: describe accurately the chemical processes going on in each of these cases.

5. Certain hard waters become soft after boiling, while others retain their hardness: explain the reason, naming the substances present in each case, stating how the latter class may be rendered soft, and representing by equations the chemical changes that take place.

[OVER.

6. How would you prove that the burning of diamond in a jar of oxygen, and the consuming of particles of carbon in the lungs are really the same processes and produce the same results ?

7. The analysis of a compound leads to these numbers :—

Carbon	37.20
Hydrogen	7.90
Chlorine	54.95
	100.05

Prove that the formula C_2H_5Cl represents correctly the composition of the body.

8. A piece of bright green wall paper supposed to contain arsenic is given you : describe fully all the experiments by which you could ascertain the presence of arsenic in the paper.

9. State fully how salt-cake (sodium sulphate) is prepared from common salt.

A ton of salt is converted into salt-cake, find the weight of sulphuric acid required, and the weights of the resulting products.

10. The formula of water was formerly written $H\ O$, and subsequently for some years $H_2\ O_2$ (assuming $O = 8$). Discuss both these formulæ, pointing out any inconsistencies you may detect in them. Give reasons for adopting the formula now in use.

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JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

ALGEBRA.

TIME—THREE HOURS.

Examiner: J. A. McLELLAN, LL.D.

NOTE.—*Ten Questions will be counted a full Paper.*

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1. Simplify $$\left\{\left(\frac{x+y}{x-y}\right)^2+1\right\}\left\{\left(\frac{x+z}{x-z}\right)^2+1\right\}\left\{\left(\frac{y+z}{y-z}\right)^2+1\right\}\times\frac{x^2(y-z)+y^2(z-x)+z^2(x-y)}{x^4y^2+x^2y^4+x^4z^2+x^2z^4+y^4z^2+y^2z^4+2x^2y^2z^2}.$$

2. Solve (1.) $$\frac{ax+m+1}{ax+m-1}+\frac{ax+n}{ax+n-2}=\frac{ax+m}{ax+m-2}+\frac{ax+n+1}{ax+n-1}.$$

(2.) $$\sqrt[3]{1+\sqrt{x}}+\sqrt[3]{1-\sqrt{x}}=2.$$

3. A, B, and C start from the same place; B, after a quarter of an hour, doubles his rate, and C, after walking 10 minutes, diminishes his rate one-sixth; at the end of half an hour, A is a quarter of a mile before B, and half a mile before C, and it is observed that the total distance walked by the three, had they each continued to walk uniformly from the first, is $6\frac{1}{4}$ miles. Find the original rate of each.

4. (1.) Investigate the relations that must exist between the constants in order that $Ax^2+By^2+Cz^2+ayz+bxz+cxy$ shall be a perfect square.

(2.) Find the conditions that the values of x and y derived from the equations $ax+by=\frac{a^3}{x}+\frac{b^3}{y}=c^2$ may be rational.

[OVER.

5. If x^2+px+q and x^2+mx+n have a common factor, then will $(n-q)^2+n(m-p)^2=m(m-p)(n-q)$.

6. Prove $(a^m)^n=a^{mn}$, whether m and n be positive or negative, integral or fractional.

Show that $(x^{2m}+x^{2n})^{\frac{1}{mn}}=x^{\frac{1}{m}+\frac{1}{n}}\times(x^{m-n}+x^{n-m})^{\frac{1}{mn}}$.

7. (1.) If $\frac{a}{b}=\frac{c}{d}$, then $\sqrt{\frac{a^{2n}+b^{2n}}{c^{2n}+d^{2n}}}=\left(\frac{a-b}{c-d}\right)^n$.

(2.) If $\frac{a^nd^n-b^nc^n}{\frac{1}{4}n(a^n-b^n-c^n+d^n)}=\frac{a^nc^n-b^nd^n}{\frac{1}{4}n(a^n-b^n-d^n+c^n)}$, then each of these fractions $=\frac{1}{n}(a^n+b^n+c^n+d^n)$.

8. If x be very small, show that—

$$\frac{(1+2x)^{\frac{1}{2}}+(1+3x)^{\frac{1}{3}}}{2+5x-(1+4x)^{\frac{1}{2}}}=2-4x, \text{ very nearly.}$$

9. Prove that $1-n^2+\frac{n^2(n^2-1^2)}{1^2.2^2}+\frac{n^2(n^2-1^2)(n^2-2^2)}{1^2.2^2.3^3}+\ldots.=o$.

10. If a debt \$$a$ at compound interest be discharged in n years by annual payments of \$$\frac{a}{m}$, show that $(1+r)^n(1-mr)=1$, where r is the interest on \$1 for a year.

11. Solve—(1.) $3x^2-2xy=55$.

$x^2-5xy+8y^2=7$.

(2.) $\frac{5}{x^2-7x+10}+\frac{5}{x^2-13x+40}=x^2-10x+19$.

(3.) $a^2b^2x^{\frac{1}{q}}-4a^{\frac{3}{2}}b^{\frac{3}{2}}x^{\frac{p+q}{pq}}=(a-b)^2x^{\frac{1}{p}}$.

(No. 42.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

BOOK-KEEPING.

Time—One Hour and a Quarter.

Examiner: J. J. Tilley.

1. Give A's and B's Journal entry for each of the following transactions:—(ruling not required on the paper.)

June 1st. A bought from B 20 shares Ontario Bank Stock—par value $100 per share—at 107, giving in payment his note at 3 months, with interest at 8 % per annum for $1000, a sight draft on C for $1000, and a cheque on the Ontario Bank for balance.

June 15th. A has this day discounted his note in favour of B, dated June 1st, at 3 months, for $1000, bearing interest at 8% per annum, A being allowed discount at the rate of 10 % per annum.

June 20th. A sent B $3000 worth of Mdse. to be sold on joint account; and B, on its arrival, June 24th, added $1800 worth of Mdse. On the 25th June A received advice and invoice of Mdse. added. A on sending the goods away had them insured at 1½%, paying premium in cash, and B on receipt of goods paid freight, &c., per cheque $120.

[OVER.

2. What is meant by "Averaging an Account?" When will the balance of the following account become due?

	A in account with B	Dr.
Jan. 13.	To Mdse. at 30 days	$300
Feb. 4.	" Sundries	450
Apr. 15.	" Real Estate	750
		Cr.
Feb. 15,	By Sundries	$750
May 20.	" Cash	300
June 10.	" Merchandise	120

3. Give Day-book entries for the following:—

(*a*)	Cash,	Dr.	$1000	
	Bank	"	4000	
	Bills Rec.	"	1000	
	To B's Consignment			$4000
	" Merchandise			2000
(*b*)	B's Consignment	Dr.	$3000	
	To Bank			$1800
	" Cash			700
	" Bills Rec.			500
(*c*)	Merchandise	Dr.	$2000	
	Expense	"	220	
	To Bank			$1800
	" Bills Rec.			400
	" Interest			20

4. Post the entries in No. 3, and close the accounts. Given Mdse. on hand, valued at $350—Coal, Wood, &c., for use in business, valued at $140—our commission, charges, &c., on B's Consignment to date being $110.

(No. 43.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

ENGLISH LITERATURE.

TIME—THREE HOURS.

Examiner : J. M. BUCHAN, M.A.

SHAKESPEARE.

1. Quote or refer to "examples of excessive personification of nature, extravagance of imagery, and expression overcharged with condensed thought," furnished by this poet, and compare him in these respects with Bacon.

2. MACBETH.—Thou canst not say I did it: never shake
Thy gory locks at me.
ROSSE.—Gentlemen, rise, his highness is not well.
LADY M.—Sit, worthy friends:—my lord is often thus,
And hath been from his youth: 'pray you, keep seat;
The fit is momentary; upon a thought
He will again be well: If much you note him,
You shall offend him, and extend his passion;
Feed, and regard him not.—Are you a man?
MACBETH.—Ay, and a bold one, that dare look on that
Which might appal the devil.
LADY M.— O proper stuff!
This is the very painting of your fear:
This is the air-drawn dagger, which, you said,
Led you to Duncan. O, these flaws, and starts,
(Impostors to true fear) would well become
A woman's story, at a winter's fire,
Authoriz'd by her grandam. Shame itself!
Why do you make such faces? When all's done,
You look but on a stool.
MACBETH.—Prithee, see there! behold! look! lo! how say you?
Why, what care I? If thou canst nod, speak too.—
If charnel-houses, and our graves, must send
Those that we bury, back, our monuments
Shall be the maws of kites.

[OVER

(i.) Detail the circumstances which at this particular time predisposed Macbeth to be the subject of this illusion.

(ii.) Of what other illusions of a similar kind is Macbeth represented as being the subject?

(iii.) Did Shakespeare intend the ghost to be regarded as having a real existence? Give reasons for your answer.

(iv.) Explain the force of the following expressions in Lady Macbeth's last speech:—

> "Very painting of your fear," "flaws," "impostors to true fear," "authoriz'd," "shame itself."

3. Greene, in *A Groatsworth of Wit bought with a Million of Repentance*, says:—

"There is an upstart crow beautified with our feathers, that with his tyger's heart wrapt in a player's hide, supposes he is as well able to bombast out a blank verse as the best of you, and being an absolute Johannes Factotum, is, in his own conceit, the only shake-scene in a country."

Explain the allusions.

BACON.

1. "Crafty men contemn studies; simple men admire them; and wise men use them; for they teach not their own use: that is a wisdom without them, and won by observation. Read not to contradict, nor to believe, but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested. Reading maketh a full man, conference a ready man, and writing an exact man. And therefore, if a man write little, he had need have a great memory; if he confer little, have a present wit; and if he read little, have much cunning to seem to know that he doth not. Histories make men wise, poets witty, the mathematics subtle, natural philosophy deep, morals grave, logic and rhetoric able to contend."

" Prosperity is the blessing of the Old Testament, adversity is the blessing of the New, which carrieth the greater benediction and the clearer evidences of God's favours. Yet even in the Old Testament, if you listen to David's harp, you shall hear as many hearselike airs as carols, and the pencil of the Holy Ghost hath laboured more in describing the afflictions of Job than the felicities of Solomon. Prosperity is not without many fears and distastes; and adversity is not without comforts and hopes. We see in needleworks and embroideries it is more pleasing to have a lively work upon a sad and solemn ground, than to have a dark and melancholy work upon a lightsome ground. Judge therefore of the pleasure of the heart by the pleasure of the eye. Certainly virtue is like precious odours, most fragrant when they are incensed and crushed, for prosperity doth best discover vice, but adversity doth best discover virtue."

(i.) Point out the characteristics of Bacon's style of writing and mode of thinking, which are exemplified in the foregoing extracts.

(ii.) Compare their style with that of the received version of the Scriptures.

(iii.) Name the essays from which the extracts are taken.

2. Pope calls Bacon—

> "The wisest, brightest, meanest of mankind."

Discuss his claims to each of these epithets.

ADDISON.

1. Describe briefly, and, as far as you can, account for the literary character of the age of Anne.

2. Sketch after Addison, the portrait of Sir Roger de Coverley.

3. Refer to passages in the *Spectator* which are good examples of Addison's serious and humorous styles.

[OVER.

SCOTT.

1. Contrast the use of the supernatural made by Shakespeare in " Macbeth " with that made by Scott in the " Lady of the Lake."

2. " At Doune, o'er many a spear and glaive,
Two barons proud their banners wave.
I saw the Moray's silver star,
And marked the sable pale of Mar."
" By Alpine's soul, high tidings those !
I love to hear of worthy foes.
When move they on ? "—" To-morrow's noon
Will see them here for battle boune."
" Then shall it see a meeting stern !
But, for the place—say, couldst thou learn
Nought of the friendly clans of Earn ?
Strengthened by them, we well might bide
The battle on Benledi's side.
Thou couldst not ? Well, Clan Alpine's men
Shall man the Trosach's shaggy glen ;
Within Loch Katrine's gorge we'll fight,
All in our maids' and matrons' sight,
Each for his hearth and household fire,
Father for child, and son for sire,
Lover for maid beloved !—But why—
Is it the breeze affects mine eye ?
Or dost thou come, ill-omened tear !
A messenger of doubt or fear ?
No ! sooner may the Saxon lance
Unfix Benledi from his stance,
Than doubt or terror can pierce through
The unyielding heart of Roderick Dhu !
'Tis stubborn as his trusty targe.—
Each to his post !—all know their charge."
The pibroch sounds, the bands advance,
The broadswords gleam, the banners dance,
Obedient to the Chieftain's glance.
—I turn me from the martial roar,
And seek Coir-Uriskin once more.

(i.) Write notes on the proper names.

(ii.) Explain " glaive," " sable," " boune," " stance," " pibroch."

(iii.) Point out the fine and the weak parts of the passage quoted.

3. Give a brief account of the life and works of the contemporary poet whose success caused Scott to abandon poetry.

(No. 44.)

Education Department, Ontario.

JULY EXAMINATIONS, 1877.

FIRST CLASS TEACHERS.

DRAWING.

TIME—ONE HOUR AND A QUARTER.

Examiner: JAMES HUGHES.

1. Give definite instructions to a class commencing to draw from *objects*, about taking measurements, so as to secure proportional dimensions in their drawing.

2. In drawing a vase, goblet, or other similar object, would you draw the *right* or *left* side first? Give reasons for your answer.

3. In introducing a class to object drawing, what are the most important things to be attended to?

4. In drawing an object, should its real or apparent form be given? (*b*) Why?

5. State the two methods of giving a blackboard drawing lesson. (*b*) Which would you adopt? State reasons for doing so.

6. Give rules for drawing the perpendicular and horizontal lines in a row of houses, seen from a distance by a person looking down the street on which they are situated.

7. Draw the wheel of a wheel-barrow, or any similar wheel; 1st, with the eye opposite the centre of the end of the hub; 2nd, viewing the wheel obliquely. Let there be eight spokes in the wheel. Give *construction* lines in each case.